

Paine (M.)

A DISCOURSE

INTRODUCTORY TO A COURSE OF LECTURES

ON THE

INSTITUTES OF MEDICINE AND MATERIA MEDICA,

DELIVERED BEFORE THE

Medical Class of the University of New York,

AT THE SESSION OF 1841-42,

BY



MARTYN PAINE, A.M. M.D.

PROFESSOR, &c.

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THIS Discourse is respectfully dedicated to the MEDICAL CLASS attending the Session in the NEW YORK UNIVERSITY, for 1841-42.

DISCOURSE.

GENTLEMEN,—It being a part of the duties of my chair to teach you the Philosophy of Medicine, I shall endeavor, at all times, to follow the *simple* path of Nature; and in so doing, we shall find nothing but an admirable system of design, intimately associated in all its parts, always consistent, reaching from the *rudimentary* development of the organic being to the ultimate extinction of its laws, whose multifarious phenomena perpetually spring from principles which are established in the *germ*. Whatever, therefore, may be the complexities of disease, you have the consolation of knowing that it is simple in its *essential* elements, that these elements are *forever* present, and that you will be mainly employed in investigating the *modifications* which they undergo. Here, then, you will always stand upon a great and immutable foundation of Nature. This will always be your guide, always your point of departure, and to this you will always return from your excursions into the paths, which radiate from it in conformity with the constitution of the great plan of organic life.

Nature, indeed, is *always* simple in her *fundamental* laws. She abhors a complexity of causes, as much as she is said to do a vacuum. The Institutes of Medicine, therefore, and the Philosophy of the operation of Remedial Agents, being directly the offspring of the properties and laws of organic beings, *they*, also, must, of necessity, be simple in *their* essential attributes. Hence, it is manifest, that my course of instruction will have mutual and intimate dependencies—forming a connected chain which cannot be interrupted without impairing the whole.

But, there are, also, *artificial* institutes of medicine—such as are not recognized by Nature; and which, therefore, consist of a broken series of hypotheses, either having no relation to each other, or standing in direct opposition. From this, it necessarily results that the treatment of disease, which is founded upon these hypotheses, is not less unphilosophical, not less contradictory of itself, and abundantly demonstrative of the primary error. This has been the misfortune of medicine at all ages of the art, but, at none more so than in our own times. With *these* I must also make you acquainted, though I shall limit my exposure of error to the doctrines of the present day. You will thus enjoy the opportunity of exercising your own judgments, and of making your election between good and evil—myself allowing that the evil may be mine.

In adopting this only method of arriving at the truth, my earnest de-

sire to remove some formidable obstacles from your path will necessarily give an *appearance* of asperity where none is intended. It will unavoidably result from the nature of the contrasts which will be presented ; and the importance of our pursuits to the interests of mankind, and to the dignity of mind, will permit no complimentary sacrifice to the ingenuity of speculations. Truth must be stern and inexorable, to overcome the obstinacy of error ; for error, like the heads of the hydra, can never be propitiated. We may cut off its heads—but still the principle of regeneration may remain. We must then come to the *actual cautery*, as employed by Hercules in the case of the hydra, as our only infallible resource. But, in all that I may say, now, or hereafter, I wish it to be distinctly understood, that my remarks have no intended application to *men*, but are simply designed for the promotion of truth—of that truth which was so beautifully recommended to your admiration, the last evening, by its “Professor in Theory and Practice.”

I shall begin my course of instruction by examining the composition of organic beings in both animated kingdoms—though not so much for the purpose of acquainting you with the abstract fact, as of presenting a series of coincidences at the very foundation of organic beings, which irresistibly demonstrate their dependence upon peculiar properties and laws, about which all physiology, all pathology, all therapeutics, are immediately concerned. A knowledge of these vital properties and the laws they obey, and which, as of all other existences, we acquire through their peculiar and endless phenomena, is fundamental in medicine. They preside over all healthy and morbid conditions. The functions, and all the products of the living being, are *primarily* referable to these properties. Unlike all other properties or powers of nature, they are susceptible of influences from external and internal causes, and are liable to great instability. This instability is at the foundation of disease, and of therapeutics—though the latter involves the important constitutional principle, that when these properties are diverted from their natural condition, they have an *inherent tendency* to return to their natural standard.

We have thus before us, in a *few* words, the simple elements of physiology, pathology, and therapeutics. They are all immediately concerned about one elementary principle, which is manifested under different phases. The *physiological* or *natural* condition is constituted when the vital properties possess their *normal* state ; the *pathological*, when they are *altered* from their natural condition ; whilst *therapeutics* *modifies* their morbid changes, and places them in a condition to obey their constitutional tendency to return to a state of health. *This* they are often able to accomplish without the intervention of art, which *never* cures, but only places *nature* in the *way* of cure. This is all that can be understood of the celebrated *vis medicatrix naturæ*, a most important law appertaining to the constitution of the vital properties, but about which much illusion, and many extravagancies have prevailed.

Such, then, is fundamental in medicine. But, however elegant this simplicity in the most essential attributes of organic beings, such are the natural modifications of the properties of life in the different organs and tissues, and such their liability to change from a thousand influences, and

according to the nature of those influences, and although nothing happens but under the direction of some everlasting law which operates according to the existing combination of causes, medicine is, nevertheless, the most profound, the most complex, the most difficult of all human pursuits. It was once thought to have been only worthy of the gods—and temples were consecrated to their disciples.

But, the vital properties must have their *instruments of action*, through which the *functions* are performed, the being obtains his growth and nutrition, his secretions elaborated from the universal alimentary fluid, and the morbid phenomena carried on. These instruments of action consist of the visible organization; and in every part of this are the vital properties implanted.

It is obvious, therefore, that we can have no adequate knowledge of the functions of life, whether healthy or morbid, without a critical familiarity with the organization through which they are conducted; and this will become more and more apparent as we advance in our inquiries. Nor is it alone a *general* outline of the human mechanism which will enable us to comprehend the *arcana* of disease, or to apply its appropriate remedies. The vital properties are *differently modified* in every organ, and in the different tissues of each organ, and often in the same parts of a continuous tissue, and they are not only constantly liable to different influences from remote causes, but according, also, to their natural modifications in different parts. They must, therefore, be liable to great differences in their *results*; whether physiologically, pathologically, or therapeutically considered. We must also be familiar with the sources from which the various organic viscera derive their nerves and bloodvessels, and how communications are established amongst the organs by these and other anatomical connections.

The most important of these media of communication is the cerebro-spinal and ganglionic system, especially the sympathetic branch of it. The distribution of the sympathetic nerve should be well comprehended, as should also those cerebral nerves which are contributed to important vital organs, or others which associate themselves with the sympathetic, and thus establish intimate relations between the organs of animal and organic life. By these various nervous connections, the harmony of the entire machine is maintained, or the equilibrium of the whole disturbed when morbid causes may derange the action of one part or another. It is also through these connections, particularly, that remedial agents, whether applied to the stomach or to the skin, exert their salutary impressions upon diseased organs which may be remotely situated. The communicating nerves, however, are often complex, and their analysis is not always of easy attainment. But, a knowledge of the nerves, with which the natural and morbid functions are so intimately associated, is less important than that of the general tissues which compose each vital organ. The peculiar properties of the nervous system, which are known as sensibility and sympathy, have no other participation in organic processes than as they *influence* those processes. The nervous power is to be regarded in the light of a vital stimulus, and regulator of the organic functions—sensitive to an inconceivable degree, and whilst itself a vital stimu-

lus, is capable of *being acted upon and modified in its nature*; but operating in health without any remarkable demonstrations. But, its *constitutional* nature is such for the maintenance of uniform and harmonious movements throughout the animal fabric, that when *influenced by unusual causes*, it may undergo a violent development, become *modified* in its nature, and may determine *healthy* or *morbid* changes in the *organic properties*, or *extinguish* them in the *twinkling* of an eye.

I was not a little gratified at the manner in which our Professor of Surgery adverted to the prodigious results which are destined to flow from the discoveries of Sir Charles Bell; and I will go perhaps even farther than he, and anticipate the time when those discoveries will be to medicine what the calculus is to mathematics. Encouraged by the brief, but comprehensive and philosophical reference which was made on Monday evening to the principles which are involved in this great triumph of physiology, I will also venture to predict, that the doctrine which I have just *propounded* for the first time in relation to the modification of the nervous power, will open to us the whole philosophy of remote sympathy in connection with pathology and therapeutics. It opens to us the whole philosophy of the operation of morbid and remedial agents upon organs that are remotely situated from the direct seat of their application. This supposed modification of the nervous power is in perfect harmony with the instability of the organic properties themselves, and is not only sustained by the whole force of this analogy, but by *all* the phenomena that relate to the principle of remote sympathy. That you may, however, the better comprehend what I regard as modifications of the nervous power, according to the nature of the agents or causes by which it is developed, whether natural, morbid, or remedial, you have only to consider, farther, how *electricity* is modified by the *galvanic* apparatus, and how again by the organization of the *torpedo*; how each affects in peculiar modes the properties of life, or how each determines peculiar influences upon inorganic substances; or how, again, perhaps, the magnificent conception may have been demonstrated by our Professor of Chemistry, that the colorific, the calorific, and the deoxydizing rays of light are only modified states of a common substance. Think, also, of the wonderfully different attributes of each of these rays, and you will then have no difficulty, with the aid of the multifarious phenomena of sympathy, and the cerebro-spinal and ganglionic system, in comprehending how this poison or that, or this remedy or another, or joy or grief, shall so *develope* and *modify* the nervous power, that it shall be directed upon, and alter the organic properties of parts that are distant from the direct seat of the morbid or remedial action, in one case in one way, in another case in another way. I know of no exception to the theory, and without it you cannot explain the remote influences of remedial agents; whilst this construction of their *modus operandi* is in perfect harmony with the natural phenomena of sympathy.

But, what may be the *nature* of the nervous power, or of the organic powers, no one can divine, any more than he can imagine the *nature* of the most tangible and ponderable substance. But this does not prevent us from *knowing* the *existence* of the substances, and their *laws*, and that each is *radically different* from the others.

The practitioner, however, may come to acquire, by a diligent observation of nature, an adequate apprehension of the vital influences which one part exerts upon others, without knowing, in detail, the special media of communication. But, his knowledge of these influences is vastly facilitated by anatomical acquirements, pursued with a reference to this fundamental point; and without this anatomical aid, conviction is slow, and success can only be obtained by a long and careful study of the phenomena of life, under their varied aspects of health and disease. This labor, too, with the best anatomical proficiency, must be always great before the laws of sympathy can be justly realized in their variously modified relations, or in their practical bearings.

Rare genius may analyze the phenomena of disease, often reduce them to generalizations, and apply the *appropriate* remedies, without, perhaps, understanding the details of structure. We have examples of this nature among the fathers of medicine, of whom none is so remarkable as he who created the science, and expounded that system of rational philosophy, which, at a distant age, was consecrated by Bacon, and has since given to arts and sciences an impulse which is carrying them fast to the limit of any rapid improvements. But, though it be easy to *admire* the genius which *creates* a science, we may not *imitate* it. Most of us must be contented to study *its elements*, and to advance, step by step, before we can grasp the principles *already* known, and reduce them to practice. Such, at least, has been my own laborious experience; slowly gathered in the field of nature—or by consultation with others—or by unwearyed meditation. We must come, therefore, to the work of preparation, not only with resolute purpose, but with a *zeal* that shall maintain that purpose.

Although anatomy is at the foundation of practical medicine, it is only that of the great vital organs with which the *physician* is particularly interested; and yet these are the ones which are most apt to be neglected. Such as relate to that division which is called animal life, the muscles, for instance, is to him comparatively unimportant. It is here that the surgeon holds his empire, and to him this branch of anatomy is not less indispensable than the former is to the physician. The mere operative surgeon may practise his art without knowing whether the stomach be composed of one or more tissues—whether it be seated in the abdomen or in the thorax. And with all this ignorance, he may acquire a far greater temporary renown by a stroke of the knife, than the most consummate philosopher in medicine. But he, who would embrace in the range of his usefulness the more exalted art of *treating* surgical diseases, and who prefers the conservative efforts of nature to the more summary process, must be skilled in the whole department of anatomy, and in the divination and cure of *internal* disease. So, will you be told by one whom the world *delights to honor*.

Considering, therefore, gentlemen, the importance of anatomy to your practical pursuits, I trust you will spare no effort in making an attainment which will exalt you above the ordinary grade of practitioners, and which will bring you a daily recompense in the conviction that your knowledge of disease reposes on one of the great foundations of nature—that your

remedies are directed to an intelligible purpose, and, whether the issue be favorable or fatal, that you may equally rejoice in the consciousness that you have been guided by an enlightened understanding of the art, or that your efforts have not been frustrated by the imbecilities or the rashness of ignorance.

We are now conducted to the immediate objects of inquiry in my lectures ; the first of which is physiology in its relations to the natural condition of organs. This is the beginning of a *vast* superstructure, which has been the progressive work of many ages, and which, more than any other pursuit, has enjoyed the laborious efforts of genius, and the unwearyed toil of a great, though humbler class of mankind.

From physiology, we ascend to its application to pathology, and therapeutics ; which, in their connected series, make up the vast fabric that reposes upon the *structure* of organs.

Physiology, according to its Greek derivation and original import, embraces the whole field of nature. The moderns, however, have restricted the word to the science of life. In this acception, it comprehends all that relates immediately to the powers and functions of organic beings. It takes in, therefore, the whole vegetable, as well as the animal kingdom. Each of these kingdoms possesses in common the most important conditions of life, though existing in each under specific modifications or varieties ; not, however, very dissimilar, and intimately connected by a gradation of analogies, as we descend along the chain of either till we come at their connecting link in the lowest being of one or the other—as the sponge, for instance, which has enjoyed the distinguished honor of having been successively assigned to the three kingdoms of nature, and of being now exalted to the dignity of an animal. Other conditions are superadded to the nobler kingdom, which, with the differences of structure, and the modifications of their common properties of life, and their modes of subsistence, distinguish the two living kingdoms from each other. I shall enter largely into the consideration of these topics, as all rational medicine is intimately concerned with their knowledge. The importance which I have attributed to anatomy is predicated of these ulterior objects. It would be in vain that you comprehend the *structure* of organs, without knowing the nature of the powers and functions which they subserve, and the laws which they obey ; since all diseases consist essentially in certain alterations of the properties of life, which lead to all the modifications of the laws and functions, and to every sensible result of a morbid nature. A knowledge of the whole is obtained through the phenomena as they are presented to our senses, and by nothing else. From these, we reason to the invisible existence, its changes, &c., with as much certainty as to those which possess the most tangible characteristics. It is just so in respect to the mind, and the brain with which it is associated, whether in their natural or morbid aspects.

Since, therefore, every disease consists fundamentally in some alteration of the properties of life, you will at once perceive that physiology is the most important element of medical education. Its knowledge necessarily involves that of anatomy, and all practice, which does not constantly refer to the tissues diseased and to the modified conditions of the vital pro-

perties, is purely empirical. Empiricism, however, may be of an enlightened nature under the direction of *rare genius*; but, in all other hands, it embarrasses nature, and is a curse to mankind. Of this you will meet with demonstrations in your professional intercourse. You will also occasionally witness the triumph of mind over the most absolute defects of education. In all such instances, however, you will see it glancing at the whole array of symptoms, and forming its conclusions from nicely balanced combinations of the whole with that store-house of experience which is garnered up as a necessary guide to the solution of every new problem. These problems are as various as every case of disease, and as every variation it may undergo during its decline, or in its advances to a fatal termination. Thence is it, that without our fundamental requisites, genius, combined with observation, must be often at fault; and it may be difficult to say whether its success will compensate for its failures and mistakes.

But, qualifications of this order are rare examples, and the most usual consequences of deficiency in anatomical and physiological acquirements, are the most appalling ignorance of disease and a frightful destruction of human life.

Let us call up another large and better class of practitioners—educated, and often erudite men, but who make not a proper application of their knowledge—as was well said of Broussais, on Monday evening. The special evil with this class, if we except the Broussaians, consists in not regarding the properties of life as they are naturally modified in the various textures of the body, and in not considering disease as consisting essentially in morbid alterations of these properties. This class embraces many of the most distinguished men of our age, and their train of followers, especially in Europe, makes up no small part of the profession. They have generally but an imperfect apprehension of the properties of life, and whilst they allow of their existence—nay, more, whilst many of them maintain the extraordinary doctrine of their existence in the *elements* of matter, by the strangest contradiction, and in violation of that fundamental principle in philosophy which prohibits an unnecessary multiplication of causes, they maintain that all the great vital processes, all the secretions, &c., are carried on by the forces which govern dead matter, and of which the *chemical* are supposed to be mainly instrumental.

This doctrine shuts out, *of course*, all true pathology; and yet are these the philosophers who are now most ardently engaged in developing those lesions of organization which result from morbid processes, but in the production of which it would seem to be sufficiently obvious that totally different causes have been concerned, than such as prevail in the inorganic world. Many of them have also gone back to an opinion which prevailed in the dark ages, that all disease consists essentially in a primary lesion of organization, but without revealing to us any more than their benighted ancestors, how those changes of structure come to pass. But, as if for the *purpose* of multiplying causes, and of placing them in the same relative contradiction in which they have arrayed the vital and chemical forces, they have also gone back to the humoral pathology, and whilst they tell us that the essential cause of disease con-

sists in a lesion of organization, which is independent of all agency of the vital properties and of the forces of chemistry, they also affirm that its essential cause consists in a vitiated state of the blood. I will not now tell you of the practical conclusions which have been founded upon this utter confusion of causes.

The *physical* doctrines of life have had their sway at various eras, though especially characteristic of our own age; and the humoral pathology had been an appendage of almost every system till the beginning of the last century. It was then that *solidism* began to rise with the radiant beams of that *vitalism* which gave animation to medicine from Hippocrates to Celsus, and before which the humoral pathology was but as a *withered weed*, until finally, after many centuries of stinted growth, it was plucked up and forgotten. The appearance of Hunter and Bichat swept away every vestige of that philosophy which had so often disfigured the science of medicine. Tiedemann, and other illustrious vital physiologists, followed in the wake. You may know their philosophy by a single passage from the great German physiologist. "Already," he says, "it has been more than once attempted to deduce life from the laws of mechanics, physics, and chemistry. This error has been committed," he goes on, "by physiologists and physicians of the iatro-mathematic and iatro-chemical schools. But, in every age, distinguished naturalists discovered this error and opposed it."

"Among *physical* people," says Hunter, "we find such expressions in *common use*, as, the humors are affected in the blood; sharp humors in the blood; the whole blood being in a bad state; the whole blood must be altered, or corrected; and a variety of such expressions, *without meaning*. They even go so far as to have hereditary humors, as *gout*, *scrofula*, &c., and make us the *parents* of our own humors, saying that we *breed bad humors*. In short, the *whole theory* of disease has been built upon the supposition of humors in the blood, or of the *blood itself being changed*. I cannot conceive," he adds, "what *is* meant by it." But, what Hunter avows he could not comprehend, is now consecrated as the *science of medicine*.

But perhaps Hunter was dull of apprehension, though he studied organic nature more extensively, and more laboriously, than any other man, before or since. If we consult the opinion of Bichat upon the same physical doctrines of life and disease, we shall still find that their successors are apt to consider dulness of apprehension to exist in the ratio of genius and observation. "To *what errors* have not mankind been led," says Bichat, "in the employment and denomination of medicines? They created *deobstruents*, when the theory of *obstruction* was in fashion—and *incisives* when that of the *thickening* of the humors prevailed. The expressions of *diluents* and *attenuants* were common *before* this period. When it was necessary to *blunt* the *acrid* particles, they created *inviscents*, *incrassants*, &c. Those who saw in diseases only a *relaxation* or *tension* of the fibres, the *laxum* and *strictum* as they called it, employed *astrigents* and *relaxants*. *Refrigerants* and *heating* remedies were brought into use by those who had a special regard in diseases to an *excess* or *deficiency* of caloric. The same *identical* remedies have been

employed under *different names*, according to the *manner* in which they were supposed to act. *Deobstruent* in one case, *relaxant* in another, *refrigerant* in another, the *same* medicine has been employed with all these opposite views; so true is it that the mind of man gropes in the dark, when it is guided only by the wildness of opinion."

But, what Bichat thus describes as having only *successively* prevailed at different eras of medicine, is now bodily incorporated into the science, and constitutes, in Europe, especially, its whole essential feature. Were this kind of medicine truly founded in nature, you readily perceive that it would be useless for me to do more than simply to state the facts, and that my course of instruction might properly terminate with this introductory lecture. There would be *no principles, no institutes, no laws, no variety* to expound; and we might lie down at once with Brandreth and Morison.

Bichat, having drawn the portrait of his predecessors and of many contemporaries, which I have just exhibited to your observation, is then led to apostrophize:—"Hence," he says, "the *vagueness* and *uncertainty* our science presents at this day. An *incoherent* assemblage of *incoherent* opinions, it is, perhaps, of all the physiological sciences, that which best shows the caprice of the human mind. What do I say? It is *not* a science for a *methodical* mind. It is a shapeless assemblage of inaccurate ideas, of observations often puerile, of deceptive remedies, and of formulæ as *fantastically* conceived, as they are *tediously* arranged."

Such, then, was also Bichat's obtuseness of apprehension. But, gentlemen, neither Hunter, nor Bichat, nor Tiedemann, nor any of their great compeers in the investigation of nature, were the *dunces* which the hypotheses of our own day would declare them. An *Augean* work was then accomplished by a *stream* which may be now and then obstructed, but which will forever break up the barriers, and sweep away the offals that may accumulate in the dry channel below.

Hunter expounded, more amply than his predecessors, the doctrines of life, and founded upon them the only true systems of pathology. His masterly analysis of inflammation exemplifies the whole range of disease, and its philosophy lies at the foundation of the whole; though I by no means intend to imply that all diseases are inflammatory. But, if it be true that inflammation is essentially constituted by morbid changes of the vital properties and functions, then may the same affirmation be made of every other deviation from a state of health. This will be rendered apparent hereafter, when I come to speak at large of the laws and the analogies of nature. It was Hunter, also, who first disclosed the modifications or peculiar conditions of the properties of life in their relation to different organs, and the different tissues of the same organ.

Scarcely had this extraordinary man disappeared, when Bichat took up the great subjects, and carried the whole world before him. His doctrine of life, and the pathology which is founded upon it, recognizes no physical agencies beyond those foreign causes which maintain the vital powers in operation, or which convert them from their natural to morbid conditions. He analyzed the vital principle more extensively than had been done by Hunter, and though deeply indebted to this philosopher, he pays no tri-

bute to his unexampled labors or his exalted services. But nothing can impair the claim which mind establishes to its own property. It is as immortal as the spirit which gives it birth ; and though it be for ages entwined in the laurels of others, it will ultimately light on the memory of him who enriched mankind in enriching himself.

Bichat, however, makes the capital and contradictory mistake, like most other vitalists, of regarding life as an *effect*, or as consisting of the assemblage of those phenomena which result from the operation of the vital properties, in their connection with the instruments of action. This construction, as we shall see hereafter, is not only philosophically wrong, but practically bad. If, for instance, life be made up of the *functions* of organization, we should regard disease with a simple reference to the functions, and these are so clearly *effects*, there would be no tangible cause through which our remedies might operate, whilst no office appears to be assigned to the admitted vital properties. But, as there must be clearly *something* altered from its natural state anterior to functional derangement, we must allow that the primary cause consists in a change of the properties which preside over the functions.

Bichat, however, was sometimes inconsistent, and perhaps more so upon the great subject before us than upon any other ; for, although he endeavors to show that life is constituted by the functions, he argues that disease (which is only an unnatural state of life), is constituted by a morbid change of the vital properties. Nay, in the following extract he makes life itself to consist in the vital properties, and regards the functions merely as *effects*, of which the vital properties are the *cause*. Thus :—

"Examine," he says, "all the physiological and all the pathological phenomena, and you will see that there is *no one* which cannot be ultimately referred to some one of the vital properties of which I have just spoken. The *undeniable truth* of this assertion," he goes on, "brings us to a conclusion *not less certain* in the treatment of diseases—namely, that every curative method should have for its object the restoration of the *altered vital properties* to their natural type. Every remedy, which, in local inflammation, does not diminish the augmented irritability ; and which does not diminish animal contractility in convulsions, and elevate it in paralysis, fails in its object, and is contraindicated."

Here, then, Bichat teaches the philosophy which will be fundamental in *my* lectures. It was essentially at the foundation of all *his* pathological writings ; and it is therefore the more remarkable that he should have been so speculative and contradictory when treating specifically of life.

Bichat's career was brilliant, and though dead at 31, he lived, like Hunter, to enjoy the ripest fame. He was, however, but a meteor-light ; dazzling for a moment, and *then* extinct. He was one of the last of a galaxy, who had so illuminated the field of medical philosophy, as left but little else for the aspirations of ambition—following the beaten path of nature—than to accumulate facts and to arrange them under established principles. This occupation is too humble for the restive ardor of genius, and too servile for the purposes of renown ; and facts had already amounted to an encumbrance. It is not, therefore, remarkable, that when the great work had been brought near the verge of completion, giants should

spring up to overthrow the fabric, and erect a new edifice upon its ruins. The revolution began simultaneously in different parts of Europe, and under different aspects. But, so many powerful and ambitious minds had been in operation for ages, ingenuity had not only exhausted fundamental principles, but every imaginable hypothesis. The former being the last in the series, it only remained to reproduce exploded and forgotten doctrines. The most important of these were the physical and chemical doctrines of life, and the humoral pathology. Chemistry, too, was now in the ascendancy amongst sciences ; and the brilliant discoveries which it was pushing in the inorganic world promised a harvest of *fiction*, if not of *fact*, in behalf of the crude hypotheses of darker ages. Physiologists, therefore, became practical chemists, and chemists became speculative physiologists ; and for more than twenty years past, the study of organic life, and the philosophy of disease, have been mainly carried on in the test-glass and crucible. The blood, the secretions, and every part of the animal fabric, have again and again passed the ordeal of the laboratory, in the vain expectation of discovering the springs of life, or the essence of disease. The laboratory now copes with nature in its artificial compounds for the digestion of food, and the very furnace is brought into operation to manufacture a fluid which, it is pretended, is not inferior to that product of the stomach which results from an organization as various as the species of animals, and according to their habitudes in respect to food, and whose contrivance for this specific, variously modified, *vital* fluid, required the Mind of an Almighty Being. And this is but a *fair* example of the modest ambition of chemistry.

But, *who* are the philosophers that thus invade the sanctuary of life ? Learned, laborious, and useful ; but are they familiar with organic beings ? Do they study their phenomena ? Can they tell you a *stomach* from the bladder, when both are before them ? Can one in a thousand distinguish pneumonia from enteritis ? The replies are too obvious to be stated. They *live in the laboratory*, which, in their estimation, monopolizes all the vitality that is worth a philosopher's attention. They will solve you any of the most hidden secrets of organic beings. Are you curious to know how the various unique constituents of the bile are elaborated out of blood ? Nothing, say they, is easier. Here are they all—picromel, cholesterine, asparagin, ozmazome, resin, bovin, oleate, acetate, margarate, cholate, bicarbonate, phosphate, sulphate and hydrosulphate of soda, potash, &c.—all here in the blood—when, in simple truth, not one of them have an existence in that fluid. So is it admitted by some of the chemists, and so is it proclaimed by the laws of organic beings. They are no more in the blood than is the poison of the viper or the ink of the cuttle fish.

Then the *admirable* simplicity of the manner in which we are told these exact constituents are separated from the blood to make up the bile—whose final causes illustrate so strikingly the evidences of design, is worthy our special notice ; though it may be rationally supposed, that since the constituents are assumed to exist in the blood, it is also assumed that they are merely mechanically strained off by the liver ; whose organization is as various and as specific as the hundreds of thousands of

animals whose species are distinct. It was undoubtedly owing to prevailing doctrines of this nature, that many distinguished chemists, whom I have quoted on another occasion,* have let slip the severest censure of the chemical and physical doctrines of life—even such as practise organic chemistry in defiance of their acknowledged and direct opinions to the contrary. They universally allow, indeed, that “the laws of inorganic chemistry are *utterly inapplicable* to the phenomena of life;” and that, though “there is a chemistry of life, of that chemistry we know *nothing*.” It is therefore all assumption; and this reputed “chemistry of life,” of which it is admitted the chemist “knows **NOTHING**,” is exactly the thing of which the physiologist professes to know **SOMETHING**.

Confining ourselves to philosophers who are entitled to our profound respect, you will readily concede that Bichat comes far within the limit which is here prescribed, and that his opinion should *also* weigh in proportion to the decision with which it is given. Let us, then, hear the great French philosopher.

“The organic chemistry of the *laboratory*,” he says, “is the *dead* anatomy of the fluids, not a *physiological* chemistry. The physiology of the fluids should be composed of the *innumerable variations* which they experience according to the different (vital) states of their respective organs.” “The instability of the vital powers is the *quicksand* on which have sunk the calculations of all the physicians of the last hundred years. The habitual variations of the *living* fluids,” he adds, “dependent on this *instability* of the powers of life, one would think, should be no less an obstacle to the *chemical* physicians of the present age.”

“Again, had *physiology* been cultivated by men *before* *physics*, I am persuaded that many applications of the former would have been made to the latter. Rivers would have been seen to flow from the tonic action of their banks, crystals to unite from the excitement which they exercise upon their reciprocal sensibilities, and planets to move because they mutually irritate each other at vast distances. All this would appear unreasonable to us, who think of gravitation only in consideration of these phenomena. And why should we not in fact be as ridiculous when we come with this same gravitation, with our chemical affinities and chemical compositions, and with a language established upon their fundamental data, to treat of a science with which they have *nothing whatever to do*. Physiology would have made a much greater progress, if all those who studied it had set aside the notions which are borrowed from the accessory sciences as they are termed. But these sciences are *not* accessory; they are wholly strangers to physiology, and should be banished from it wholly.” “To say that physiology is made up of the *physics* of animals, is to give a very absurd idea of it. As well might we say that *astronomy* is the *physiology* of the stars.”

It has ever happened, as an inevitable consequence of the fundamental alliance between healthy and morbid processes, that, whenever chemistry, or physics in a more general sense, has invaded organic nature, the philosophy of disease and of therapeutics has followed in abject submission.

* See Medical and Physiological Commentaries, Vol. 1st, pp. 36—40, 75, etc. Vol. 2, p. 114—122, etc.

I cannot now conduct you through the astonishing details, which, taken one by one, would show you that organization—aye, that intellectual being whose divine portrait was so vividly drawn on Tuesday evening—is *practically* regarded, as it is *theoretically* pronounced, a mere chemical laboratory,* composed of tubes of various calibre, amenable to the laws of chemistry, which, it is imagined, may yet be imitated by the hand of man, and that with the aid of the vital properties in the elements of matter (and of course, by analogy, the soul also), whose primeval existence in this relation is maintained for contingent purposes, the confident hope is promulgated that the laboratory will yet be able to exert the highest Prerogative of Creative Power. Already, indeed, it has been given out, *ex cathedra*, that nothing is easier than the accomplishment of digestion by artificial mixtures, in the preparation of which, as I have said, the *furnace* is sometimes instrumental—that nothing is easier than the artificial fabrication of those organic compounds which are elaborated by an *unfathomable* organization that was designed for this specific purpose by the Divine Mind—but, *not* till the alimentary material has been vitally decompounded and its elements recombined in a mysterious manner by the gastric juice—then subjected to the farther organizing effects of the bile and other organic products—passed through the wonderfully vivifying lacteals—carried forward and subjected to the whole animating influence of the pulmonary system—perfected in its exalted endowments by the whole labyrinth of the circulatory organs—and lastly, though not least, determined from the blood in one everlastingly exact manner by other complex living systems—but *how*, no imagination can form the most remote conception, but through the instrumentality of those specific properties of life, which were the only power concerned from the beginning to the ending of the astonishing series of unvarying changes;—and, as might be inferred from the utterly groundless pretensions, aspirants have lately appeared with *animals*, composed of nerves, stomachs, respiratory organs, eyes, ears, *instinct*, &c.—both male and female, as on a former occasion, and *now*, as *then*, made out of the elements of matter—though in the modern case, *galvanism* is the *creative spirit*. These offsprings of the ingenuity of man, it is true, after having been duly added to the trophies of chemical science, were ultimately suspected of having been the work of another Power, and even by those philosophers who emblazoned their scientific journals, in Europe and in America, with pictured illustrations of these supposed creations of the laboratory, and who once “*saw that it was good.*” But, I will not neglect saying, that the pretended creation, independently of the living organization, of any one real organic compound, however *simple*, is not less fallacious, and arrogant, and irreverent, than was the pretended creation of insects out of silex by the spirit of galvanism.

I shall not farther speak of the moral and religious tendencies of these speculative invasions upon nature. They must be sufficiently obvious to every reflecting mind; however they may be offensive to one, or admired by another. My present interest lies in their *philosophical* merit,

* See my *Medical and Physiological Commentaries*, Vol. I., p. 36.

and in their practical bearing upon health and disease. They are uprooting every intelligible principle which relates to the former, and are converting the latter into the confusion of chaos. The humoral pathology, especially, has ranged itself under the auspices of the all-potent science; and, although as wide spread as Christendom (if we except the common empiric who has never relinquished his hold upon the same doctrines as taught during the long decline of medicine in the dark ages), its modern ascendancy has been, as it were, the work of a day. Davy, having accomplished his wonderful discoveries in the mineral kingdom, the credulous, the zealous, or the ambitious, built upon these achievements a hope that something would turn up for the benefit of a favorite hypothesis in medicine, or something for the advancement of reputation. The world was crowded, beyond example, with *learned* men, and with an *interminable* audience—constituted morally and intellectually just as they were when Pope wrote his “Essay on Man” and the “Temple of Fame,” and that other delineation of men and manners, which is called the “Dunciad.”

After a long and laborious investigation, however, of the imputed connections of chemistry with organic philosophy, I have seen no reason to qualify the declaration which I have more publicly made, that I know of *no solitary fact* contributed by chemistry, which has thrown a ray of light upon the philosophy of life or the *arcana* of disease; and, as concurring in this sentiment I have been most happy to refer to the opinion of my learned associate who presides in the inorganic kingdom, and who so justly surrenders to the physiologist an interpretation of the living department of nature. We may therefore hope for an enlightened co-operation from this philosopher, in my efforts to place you on the right road of inquiry, should he think it sometimes expedient to travel out of his inorganic dominions to regale himself at the *fountain of life*. I shall therefore have less hesitation in speaking of the illusory and *seductive* nature of the *experiments* in organic chemistry, and more especially of their application to the *laws* of organic beings—so seductive, indeed, that they beguile our senses, and cheat us of our understandings. You must look upon all these doings as upon the arts of legerdemain—apparently real, but most grossly deficient in their pretended elements. Notwithstanding the recent triumphs of chemistry in the inorganic kingdom, and the vast multiplication of its powerful resources, it has left the whole science of life and disease just where it abandoned them when it was in a comparative infancy—or, with only the difference in the relative amount of error, and the exertions which are now necessary to its exposure and defeat.

But, of this subject I shall speak more fully hereafter, and shall only now add for the purpose of securing your attention to the important questions before us, that the farther chemistry pushes its investigations, the more it multiplies proofs that the whole subject of life and disease belongs to another department of philosophy. We find, indeed, that chemistry is everywhere against the hypotheses which have been founded upon its own principles; and, in this negative sense, it will have *greatly* contributed to the science of life. All that is now necessary to obtain the full benefit of the light which has been thus reflected, is the permis-

sion of chemists that it shall take its natural direction. But, it has been said with a justice applicable to all ages, that "every new system of philosophy, true or false, must be embraced and introduced into medical science." Asclepiades explained all by the Epicurean or corpuscularean philosophy; Galen and his disciples by the philosophy of Aristotle; another eminent sect by the mechanical philosophy of Newton, who, says Bryon Robinson, "discovered the cause of muscular motion and secretion, and furnished materials for explaining digestion, nutrition, and respiration"—whilst Sir Humphrey Davy and numerous followers also think it "possible that one law alone (of a physical nature) may govern and act upon all matter; a law," continues the great chemist, "which might be called the law of animation." Hence, it was well said by Biebat, that "chemists and mechanical philosophers, accustomed to study the phenomena over which the physical forces preside, have carried their spirit of calculation into the theories of the vital laws." The principle is well exemplified by the metaphysician, Dr. Reid, who says that "Mr. Locke mentions an eminent musician, who believed that God created the world in six days, and rested on the seventh, because there are but seven notes in music. I myself," the Doctor continues, "knew one of that profession who thought that there could be only three parts in harmony, because there are but three Persons in the Trinity. A chemist imagined that he had the felicity of having discovered a principle (not that of Newton's or Davy's), which would expound all the phenomena of organic beings. The physiologist, after listening to his philosophy, told him that there was but one circumstance adverse to his discovery, which was, that the physiological facts were all exactly the opposite of what he had supposed. The chemist then begged the physiologist to state what the facts were, that he might *explain* them by *his* system. And, to the same effect we have the opinion of Lord Bacon, who says of Cicero, that "he went about to prove the sect of *Academicks* to be the *best*; for, saith he, ask a *Stoic* which philosophy is true, he will prefer his own. Then ask him, which approacheth *next* the truth, he will *confess* the *Academicks*. So deal with the *Epicure*, that will scarce endure the *Stoic* to be in sight of him; so soon as he hath placed himself, he will place the *Academicks* next him." The reasoning of Cicero is as good for the physiologist as for the *Academicks*—for so soon as the iatro-chemical or the iatro-mechanical philosophers have placed themselves, each, and all other sects who build up a spurious philosophy of life, will place the physiologist *next*.

The metaphysician, Brown, admonishes us emphatically against the propensity of carrying the theories relating to favorite pursuits into other sciences. And thus, Lord Bolingbroke, as if in rebuke of Reid, and Locke, and Brown:—

"Metaphysical writers," he says, "counsel us sometimes very gravely to silence imagination, that we may attend to experience, and hearken to the voice of reason. The advice is good, and they would neither puzzle themselves, nor perplex knowledge, if they took it as they give it."

This is the evil; and as well said by Mr. Lawrence, "what we are to guard against in our professional researches and studies, is the influence

of partial and confined views, and those favorite notions and speculations which, like colored glass, distort all things seen through their medium." We must build upon *facts*, and facts *alone*. Nor is this *all* that is necessary. We must have the *last* as well as the first in the series ; for the *last* fact may be necessary to determine the proper application of the whole, and establish a sound generalization, or *theory* as it is called. *Hypothesis*, on the contrary, rests upon a *partial* array of facts ; and this is the reason that, whatever is hypothetical grasps at a thousand shadows, and perverts a thousand realities. But, in no inquiries is the mind so apt to go astray, and to carry its hypothetical conclusions into other departments of nature, as in the science of chemistry. Here, everything seems demonstrative, and yet everything may be essentially deceptive. The enlightened chemist will confess you this ; and whilst he fears that the fabric of inorganic chemistry may be overthrown, he hopes to be more permanently associated with organic nature. That he is right in his fears, every day is supplying proof upon proof. Sometimes the proof is positive, sometimes negative ; and of the latter we have just had a remarkable exemplification in the proclamation by the celebrated Professor Christison, that he had converted the compound substance known as cyanogen, and renowned for the mischief it has done in organic philosophy, into the simple element called silicium, and which is not only a simple substance, but utterly different from either of the elements of cyanogen. This is only an exemplification of the bold positions which are now rapidly taken by chemical philosophers ; and, had it turned out as represented by the professor, it would have struck a fatal blow at every principle in chemical science. Indeed, upon the strength of this supposed metamorphosis of nature, a learned friend told me that it was not improbable that the halcyon days of alchemy were about to be realized in a substantial manner, and that we should soon have our furnaces for the transmutation of iron into gold, and the famous "tincture of all-flowers" into the never-failing "elixir of life."

It therefore ceases to be remarkable, that chemistry should have pushed for laurels far into the labyrinth of organic life. The perpetual blast of the furnace, however, the frequent jeopardy of life and limb from explosive mixtures, and the pursuit of other devices *by day* and *by night*, to turn the whole organic kingdom into the laboratory, can leave no doubt that what may have been originally the prompting of ambition grows into enthusiastic delusion. We see, therefore, the puzzle of the philosopher who "observed to Crito how unaccountable it was, that men, so easy to confute, should yet be so difficult to convince. Make a point never so clear, it is great odds that a man, whose habits and the bent of whose mind lie in a contrary way, shall be unable to comprehend it." Nevertheless, "we have among us moles that dig deep under ground, and eagles that soar out of sight. We can act all parts, and become all opinions ; putting them on or off with great freedom of wit and humor."

But, is there no *fundamental* guide which may enable the inquirer after truth to perceive, at the glance of an eye, the wide gulf which separates chemistry from physiology ? A gulf so vast should be everywhere stud-

ded with insignia in all its surrounding outskirts. I have already told you of many ; but I will now show you the *gulf itself*.

Inorganic nature is *at rest*. Its great characteristic is *vis inertiae*. Here, then, are no phenomena to denote the forces and laws by which its internal constitution is governed. But, it so happens that chemistry may set its forces in motion, overthrow its composition, examine its elements, and elicit a train of phenomena which declare its fundamental laws and forces. These, therefore, are proper and necessary experiments, since they are concerned with the forces of nature, and are the only mode by which we can reach their phenomena.

Let us now turn to the other side, and see how it is with *organic* nature. In all things *exactly* the reverse. Here, everything is in *motion*—in *creative* motion. Its powers and laws are open to the observation of all, through their perpetual and endless phenomena—and to which there is nothing remotely analogous in those results which are obtained by the chemist when he sets in motion the forces of the inorganic world.

In the laboratory, then, we have experiments upon nature in her state of *torpidity*. In the organic body we have the experiments of *nature herself*. Consider, too, that in the former case, they are meagre, uncertain, and at the mercy of every breeze. In the latter—in the individuals of every species, they are inexhaustible in variety, and in all the hundreds of thousands of species varied according to the varieties of organization—but all concurring to demonstrate a near identity of forces and laws ; and coming *directly from* nature, they *cannot deceive*. Will you, therefore, prefer the experiments of man upon organic nature when deprived of its peculiar properties and laws, and subjected to forces unknown to the organic being—and worse than all, when that being is broken up in its very structure and elements ? Do you not see the absurdity of such distortions of nature ? Are you not rather contented with *her own* endless experiments—so endless that you may unceasingly study them for the span of your life, and yet you shall have only *entered* upon their variety. What other experiments can we require than such as are thus perpetually presented by the organic being—varied as the species, varied as every moment, varied as disease from health, and the phenomena always true to the fundamental laws ? Or, if something may be yet *artificially* elicited, should it not be done through the *living* organization, that its *own* appropriate forces and laws may have *their* share in the extorted results ? Do you not instinctively answer, yes ? I was *certain* that you would, and have so written it down.

Here I had intended to have made a hiatus in my discourse ; but the patience with which you have listened encourages me to persevere to the last. I have been admonished by kind friends, within and without the profession, that a doctor's discourse should never trespass beyond the good old limit of an hour ; and this being my first address to a public audience, I had almost determined to surrender my wonted habits of thinking for myself. But it certainly appears to be an established rule, that a professor of medicine can hazard only an hour—whilst the more bountiful allotment of two hours is assigned to the parson (when he chooses to take it), six hours to the lawyer, and from twelve to forty-eight hours to a

member of Congress. Whilst each keeps himself within the limits, respectively, the rule is—never to *leave the room*, nor to *snore aloud*. For myself, I shall only ask for “the benefit of clergy.”

I will now cursorily glance at some other mischievous consequences which have resulted from the restoration of the physical doctrines of life. One of the most important, and most productive of evil, is the prevailing hypothesis which assigns, as the cause of inflammation, a stagnation or interruption of the circulation of blood in the small vessels, which carry on the processes of disease; and this doctrine is now extended by distinguished writers even to idiopathic fever. It takes away all agency from the vital properties, all function from the instruments of disease, and resolves all the remarkable, unique, and diversified phenomena of those two great classes of disease, which swallow up all the important human maladies, upon purely physical principles; as physical and as lifeless as if the being were positively dead. The hypothesis, therefore, offers no light to the practitioner, nothing to guide his hand, no cheering consciousness that he strives with a disease which the *mechanic* could not as well control. But, we shall find, gentlemen, that it is all exactly otherwise, and that these diseases which make up the great amount of human suffering, and form the principal outlet of life, are under the same great laws which determine all *healthy* processes—only, however, partially modified by certain primary alterations of the properties of life. Were the mechanical doctrine true, of what use to us would be our knowledge of physiology? Where would be its application to disease? It would have no remote bearing upon the subject, and the whole scheme of pathology could be written out upon a quarto page. But, the vital properties, in inflammation and fever, so far from being paralyzed, as it is called, are exalted in power, altered from their natural state, and are the fundamental cause of all the phenomena that are seen or felt. The blood is neither stagnant nor coagulate; but moves in the instruments of disease with increased velocity, and in an augmented quantity. With *these* facts before us, there is something for *philosophy* to contemplate, something consonant with the laws of life, and something to encourage the practitioner in a rational treatment and with the hope of success.

Are you anxious to know the origin of a doctrine so derogatory to philosophy, so contradictory of fact, so subversive of all rational principles in medicine? I will tell you, then. Like all our other prevailing physical hypotheses, the mechanical doctrine of inflammation is only the ghost of darker ages—shorn, however, of what was originally considered its animating and indispensable attribute. It was the conception of one Vacca, an Italian physician of vivid imagination, who never pretended that it rested on a *solitary* fact. It was considered, indeed, so utterly baseless, that Hunter does not refer to its existence. But, what was thus *originally* the project of imagination, now professes to rest upon *experiment*. It is also a curious coincidence, that all the exploded doctrines of antiquity which have been recently brought forward to decorate an age which *boasts* of its *originality*, never were advanced under even the *pretended* auspices of fact. But, as I have already said, the most remarkable appendage to Vacca's hypothesis, and which the inventor considered indispensable, is studiously kept out of sight.

Vacca maintained a debility of the bloodvessels, in consequence of which they were said to lose their power of propelling the blood, and, as another consequence, the blood is supposed to stagnate and coagulate within them. So far his followers. But here *their* pathology stops; and as to their principles of cure, they are of course as mechanical as the pathology. But, a great majority do not even allow of independent action to the bloodvessels, in their *natural* state, but refer the whole movement of the blood to the propelling power of the heart, and perhaps, also, to hydraulic pressure. They only recognize, therefore, in inflammation, a mere physical relaxation of the coats of the vessels—just as leather is relaxed by soaking in water, and probably much in the same way. Their diameters being thus enlarged, the current of blood is said to stagnate like water in the wide channels of muddy and shallow rivers—this being, *verbatim*, *their* philosophical comparison.

Vacca, however, had the sagacity to perceive that mere passive relaxation of the vessels, and stagnation of blood, would never explain the exalted temperature of the part inflamed, and its various other morbid phenomena. He therefore boldly assumed that a real combustion, an absolute fire takes place in the blood as a consequence of its stagnation in the vessels; nor have we any other ground for this opinion, than that *inflammation* signifies *a fire*. There are, he says, four principal fluids in the body; namely, the blood, the serum, the fat, and the nervous fluid. The serum, he says, is too watery to burn, but the blood burns tolerably well, and the fat burns after its well-known manner. This, you will also probably surmise, is the origin of our doctrine of spontaneous human combustion—which is one of the present embellishments of physiology. The nervous fluid is said by Vacca to be so volatile that it escapes the conflagration; and it is left *undecided* whether it be combustible or not. It therefore remains a *fair* subject for experimental inquiry; and it is difficult to divine why it has been so utterly neglected by the chemist. It is also a fundamental principle with our projector of the now prevailing doctrine, that no inflammation can take place without the *presence* of atmospheric air to *ignite* the contents of the bloodvessels. The antecedent stagnation, he maintains, lets in the atmosphere, which draws the inflammable parts into the vessels, and there ignites them. The tumefaction of the part is said to be considerably owing to an evolution of gas generated by the process of combustion, and this swelling gives room to a farther ingress of combustible matter.

Vacca affirms that these are *essential requisites*, and that without them there can be no inflammation. He published this nonsense in 1765, in a work entitled “*De Inflammationis morbosæ Natura, Causis,*” etc., and its mechanical part is the now prevailing doctrine of inflammation; whilst one of its *vital* consequences, pus, is considered, as it anciently was, a mere chemical decomposition of the tissues inflamed.

Why is this doctrine so extensively embraced? Because it is captivating, like Brown's and Broussais' theories of disease, by a simplicity which exempts the mind from all laborious reflection, either as to the remote causes, the pathology, its contingent influences, or the mode of treatment. But, with Vacca's embellishment, there was a factitious analogy

with the immense latitude over which the science of disease naturally stretches. There was, at least, abundant room for the riot of imagination, and something to give a show of plausibility to the stinted *mechanical* part of the hypothesis. Living Nature, gentlemen, is full of poetry, and man gets *all* his best poetry from her—just as the physiologist obtains from her all his doctrines of life and disease. But, as there is a poetry of the imagination as well as of nature, so, also, are there *imaginary* as well as *real* physiological doctrines. Those which are *real* are the natural *poetry*, as well as the *basis* of medicine—and they shrink, *instinctively* as it were, from all physical and mathematical calculations.

There is *another* wide spread and fatal disease, which I regard as inflammatory, and upon the philosophy of which I shall have something to say hereafter. It has attracted but little attention either in respect to its pathology, or treatment, but which, perhaps more than any acknowledged inflammatory affection, is supposed to be under the dominion of physical laws. This disease is *Venous Congestion*; appearing under simple forms, or complicated with *idiopathic fever*. In the former case, it exists as an independent affection of the veins, but constantly liable to involve other tissues, or the whole system, in sympathetic influences. When connected with *idiopathic fever*, it still maintains the character of a local and distinct disease. The two, co-existing, mutually influence and exasperate each other, just as do local inflammations of other tissues and *idiopathic fever*, when they co-exist.

In respect to Venous Congestion, it is remarkable that even during the ascendancy of *vitalism*, or when pathology was generally considered in its true relations to nature—it is remarkable, I say, that even then, venous congestion was regarded in a mechanical sense. It was then, as now, supposed to depend upon some obstruction to the venous current, and a consequent stagnation of blood in the congested veins. Since the general revival of the physical doctrines of life, this disease has attracted more attention, and has been more extensively expounded upon mechanical principles. The vital properties and vital actions have been universally excluded as elements in its pathology; and it has served as a *recruiting force* to the analogous pathology of inflammation. Remedial agents have been therefore applied upon physical principles, and their effects, if salutary at all, are construed in conformity with the same philosophy.

Considering, then, that inflammation, fever, and venous congestion, comprise most of the maladies we are required to treat, it may be safely said of medical science, that “there is nothing stirring but stagnation.”

Nevertheless, I shall ultimately show that congestion of the veins, like all other diseases, falls under the common law of dependence upon an altered state of the vital properties of the venous parietes—that there is no obstruction, no stagnation of blood in the case, but that it flows in the congested veins as freely as in health. The philosophy of this disease is of vast magnitude, since it is scarcely less prevalent than the common forms of inflammation, whilst it is more complex in its influences upon the system at large, of far more difficult treatment, and much more fatal. It forms the predominant feature in the yellow fever, and in the conges-

tive fevers of this climate, and throughout the southern and western States. It is the great source of their obstinacy, and the main cause of their fatality.

You hear much, gentlemen, of the great advances of medicine in recent times. And so it has advanced; but only so in the accumulation of facts. There is scarcely one physiological, or pathological, or therapeutical doctrine now advocated by the "*reformers*," as they call themselves, which was not more or less in vogue at degenerate ages of our science. Whether they be anatomical, chemical, or mechanical, they have all had their day, and have all been exploded as utterly contradicted by the phenomena of life and disease, and by all that is known of organic philosophy. And this I say, as due to the great cause of which I am an humble advocate.

It is not here, however, on American soil, that those seeds of darkness have taken root. With a few rare exceptions, our own medical philosophers have gone on cultivating philosophy. You will not soon forget that spirit-stirring reference, which was made by our professor of surgery, to the revolution of empires—and upon which, as I imagine, as well as upon the facts which I have now announced, he founded his conclusion, that the city of New York may yet be destined to supply Europe with her medical philosophers; and that, too, not unlikely, within a century hence.

But, there is one physiological heresy of which I have not spoken, and with which we have been also favored by the physical speculators, which surpasses all others in its degrading tendencies—for it overthrows the science of physiology and medicine at its very foundation. Like all the rest, however, it was a doctrine of the dark ages. It appears to have had its revival in the *laboratory*, though not *exactly* within the prerogatives of that modest handmaid of Nature. It has, however, won its way extensively into medical favor, and chemistry is, as usual, thanked for the blessing.

This doctrine supposes that the fluids circulate in the small vessels by *capillary attraction*—just as oil ascends in a lamp-wick, or water is imbibed by a sponge. So we are told by Liebig, for instance, the great organic chemist, and by many others. The doctrine, I say, is necessarily subversive of all physiological, pathological, and therapeutical principles—since it is one of *mere mechanics*. All the important vital processes being carried on by the small vessels, it must be perfectly apparent, upon the doctrine of capillary attraction, that nothing of a vital nature can be performed by these vessels. In short, I know of no doctrine so derogatory to medical philosophy as this one of capillary attraction.

The ignorant pretender will tell us that all this is unimportant; though no one is so much directed by hypothesis, or theory, as this very pretender himself. Does not every empiric in the land prescribe his drastic cathartics for the purpose of cleansing the blood of its supposed impurities? Are they not exactly on a par, in their doctrines, and in their practice, with the most speculative of our enlightened humoralists? Nay, have the ignorant portion of that sect, our Brandreths, our Morisons, *et id omne genus*, any reference whatever to facts or experience? Is it not all

hypothesis, and, therefore, all a reckless waste of human life? How is it with the homeopath? Certainly all hypothesis, and never a fact but such as demonstrate his errors—if nothing worse. Mount up the scale, and you shall find at every step of your ascent, from him who *prowls* about the outskirts of the profession, to him who directs the all-potent drug with the most consummate skill, that each and all mainly rely upon their conceptions of the *philosophy* of disease. But you shall also find, that in proportion as Nature has been taken for their guide, and as medical principles are founded upon the absolute phenomena of life, in their healthy and morbid aspects, *there will always be the greatest reference to facts and experience*. How momentous, then, that we should follow Nature, and that our theories should be derived from her observation alone.

The human mind *will have* its theories upon all subjects; and the whole history of medicine is a perpetual exemplification, that in no inquiries do theory and hypothesis abound so universally as in the healing art. This arises, in part, from the intricacies of the subject, but mostly so from the constitution of the mind itself. The Almighty *designed* it for theoretical conclusions, and set us the *example* in those stupendous Theories upon which the Universe, and all it contains, are founded. And what else are, or should *be*, *our* theories, than finding out and adopting those of which He is the Author? What other theory in the *natural* world can there be, than *such* as are instituted by the Almighty Being? And shall we hesitate to embrace, and to act upon *such* theories? And yet it is one of the improvements of our day, to insist upon nothing but facts, and to denounce all principles in medicine; as if the Almighty had not ordained principles and laws as well as facts—which are mere emanations from the former.

But, who are they that would thus convert our noble and stupendous science into its barbarian infirmities? They are the greatest theorists of the age—promulgating their speculations under cover of this pretension. This propensity of the mind to theorize is strikingly illustrated, for example, in the writings of Louis (a distinguished Parisian physician), who, although condemning theory and generalizations in medicine, is the greatest speculator of any era; nay more, he has embodied in a work which purports to be a simple record of facts, a greater number of hypotheses than can be gathered from the whole field of medical literature.

We *must*, therefore, have theories in medicine; and, therefore, let us have the *right* ones. Right or wrong, they grow irresistibly out of the constitution of the mind and the fundamental laws of nature. Let not the mind indulge its great natural propensity without a constant reference to those laws, through the medium of their phenomena. The elements of the former are simple, immutable, and easily known by their manifestations. These manifestations are the facts, and form the substantial ground of all intellectual acquirements. As they relate to organic beings, to their laws, their properties, their functions, whether *morbid* or *healthy*, they are to be found in the organic being *himself*—not in the workshops of the chemist or of the mechanical philosopher. But, even where the mind admits this proposition, if prone to speculation, it too often regards each fact by itself, and rears up hypotheses wrong in themselves, and in

conflict with each other. Facts should therefore be compared before they are reduced to theory ; or, where they may conflict with acknowledged principles, they should remain in an isolated state till their true nature may be better understood, or till the principles which they appear to contradict may be shown to be erroneous. Had this consideration been duly regarded, had the Attributes of the Almighty been properly respected, or the thousand facts in physiology, our age had not been stained with animal magnetism.

Should you meet with some fact which appears to indicate the dependence of life upon chemical or any other physical forces, the evidence to the contrary is so various and conclusive, that *that* fact must be considered as deficient in some of its elements, which, if known, would readily bring it under a well-established principle in physiology. These absent elements are some other facts which escape our observation, perhaps through necromancy or imposture ; and thus what is truly fact, in an abstract sense, is made the groundwork of important error. And did those of you, who venerate the Mosaic Record of Creation as the Word of God Himself, never entertain a *hope* that Geology may yet discover *other* facts which shall bring *such* as are known into better harmony with the Word of God ? May we not believe, as we shall soon see has been often the case with hypotheses founded upon partial facts, that a *solitary* discovery may yet show us that our geological premises have been deficient in a most fundamental element ? Should we not *tremble* over the ruins of about one hundred theories of Creation, which, by a recent decision of theoretical geology, even in the metropolis of France, are pronounced “unscriptural and unworthy of record” ? Would it not be safer to *rest* upon our facts, and be contented for the present to *know*, that “ In the beginning God created the heaven and the earth ”; and, in believing this, to think it also *possible* that the subsequent annunciations are equally true ? It strikes me, at least, that this is not only the safer, but the *philosophical* course.

But leaving sacred, for our more appropriate subjects, there are principles which are not as clearly confirmed by an observation of nature as the laws of life ; and, in such instances, it may be that the supposed principle and the conflicting fact should mutually stand the ordeal of inquiry. This will be accomplished by a full revision of the facts of which the principle had been predicated, and by the multiplication of other facts. It may be found that they do not all harmonize with each other, or it may happen, as with organic beings, that there is a perfect coincidence. In the former case the principle is *prima facie* false ; in the latter, it is *prima facie* true ; but neither induction will be certain till the newly discovered fact is reconciled to those upon which the principle had been founded, or is shown to be in absolute opposition. In the former case, the principle stands, and derives farther confirmation ; in the latter, it is more or less shaken, or may be overthrown and the facts become assembled under a new doctrine.

It sometimes happens that the discovery of a new fact will overthrow the most brilliant theory. Had Christison succeeded in that higher pretension than was ever made by the alchemists—that of converting cyano-

gen into silicium, he would have upset the whole science of chemistry—and in *this* respect he would have rendered a service to physiology. In the instances, however, to which I am now referring, the theory is generally of a compound nature, and some of its elements rest upon facts which nothing can invalidate. In such cases, also, the facts are of a demonstrable nature, and that which invades the theory is clear, specific, and liable to no uncertainty. Lavoisier, for instance, laid down the doctrine that oxygen gas is a *supporter* and the *only supporter* of combustion. The former part of this doctrine must remain forever true; the latter was only good till some other substance should be discovered, which, like oxygen, would maintain combustion. It was so far a hazardous principle, as it was concerned about abstract facts, and might or might not, therefore, be a fundamental law of Nature. The very next revelation of the laboratory might show that this part of the theory was a mere assumption—as it certainly was. A *single* fact was only necessary to the purpose; and already not less than three other agents are known to be supporters of combustion. Some have even supposed that all cases of intense chemical action, where heat and light are developed, are instances of combustion; and then we have spontaneous human combustion, for which no theory has been assigned. But, the universal doctrine, which respects heat and light abstractedly, rests principally upon the two facts just stated, and is otherwise deficient in the analogies which relate to true combustion. It is, therefore, like Vacca's doctrine of inflammation, and that of spontaneous human combustion, probably nothing but an assumption.

Again, it was supposed to be a law that oxygen was essential to *acidity*; and although it be generally true that this substance is the acidifying principle, others are now known to exist. Here, this great agent placed the same theorist in another predicament corresponding exactly with the calamity which beset the doctrine of combustion. The theory was partly true, and partly false; whilst its universality was overthrown by a single fact. In all such instances, where the laws have no great range of phenomena, it is unphilosophical to theorize beyond the absolute facts in possession. But, here also, other theories, of the same latitude and uncertainty as that which supposes combustion in all cases of intense chemical action, when light and heat are developed, have sprung up—some chemists supposing that acidity often arises from the associated effect of several elements.

In the examples before us, therefore, we not only see how readily certain doctrines, which rest upon abstract facts, may be overthrown by a single discovery, but with what readiness the mind starts off upon hypotheses when opportunity arises for the exercise of ingenuity. It is the peculiar misfortune of science to generalize too hastily; and it often happens that the explosion, or the introduction, of one error, is the parent of many others. It is also astonishingly true, as we have especially seen of the doctrines of life and disease, that a few phenomena are abstracted from the whole, of which they may be only sequences of the others, and are made the ground of doctrines which are in perfect conflict with other and better theories that are instituted upon the *more fundamental* facts;—and

thus a blind disregard of consistency is permitted to prevail, till a most incongruous series of assumptions is presented to us as the science which Nature teaches.

Although facts are the only foundation of theory, it is not unfrequently the case that certain existences, and the laws by which they are governed, may be fully demonstrated without any knowledge of the *nature* of the fundamental subject to which they refer. This, for instance, is true of light; for, although we know not the condition in which it exists, or whether it produce its impressions by impulses and oscillations, or by projections, &c. (from near or remote objects), the laws of reflection and refraction are permanently fixed. The same affirmation may be made of electricity, and the laws which this remarkable agent obeys. And so, also, of heat. These laws, and those in relation to light, are founded upon such facts as cannot be shaken; and when, therefore, apparently conflicting phenomena may arise, we may be certain that they will be ultimately reconciled to the established principles. Least of all can any theory of the *nature* of light, heat, or electricity, or of the modes in which they are developed, affect the laws which have been founded upon their phenomena. And though it be possible that light, electricity, and heat, are modified states of a common substance, their phenomena, and the laws which are predicated of those phenomena, declare that some peculiar, but unknown imponderable substance exists, upon which those phenomena depend. They declare it to be *sui generis*, differing as much from all things else in Nature, as was its distinct and specific Act of Creation, when the Almighty said—"Let there be light, and there was light." We *know* it to be different from every other existence, because it is distinguished from all others by its phenomena and laws.

Just so is it, gentlemen, in respect to the powers and the laws of organized beings—the whole animal and vegetable kingdoms. It matters not whether the principle of life, whose elements we denominate the vital properties or vital powers, be ponderable or imponderable, tangible or intangible, or, like the soul, immaterial; for, like the soul, and light, it has its infinitely diversified and peculiar phenomena, and its peculiar laws. Like the soul, and the principle of light, therefore, it must have a real existence—as real as was that other specific Act of the Almighty Being by which He superadded the vital principle to man, when He breathed into his inanimate structure the breath of life;—and therefore, by analogy, by Unity of Design, and by some analogous process (of which the foregoing annunciation is probably metaphorical for its greater intelligibility), into all other organic beings. How stupendous the conception—how corroborated by all the phenomena and laws of life—*how atheistical the doctrine which engrafts those vital properties upon the elements of matter, that they may rob the Almighty of His highest of all Prerogatives—the creation of living, intelligent beings!* And may it not be that the announcement of the creation of "the breath of life," subsequently to the institution of the organic structure, was especially intended to prohibit this very doctrine which ascribes to the elements of matter the essential requisite for organizing themselves?

We may be ignorant of the *principle* of life, yet understand its

whole government ; and the objection is perfectly futile, that we cannot reason about that principle because we cannot demonstrate its nature. Will you deny the existence of the soul because you cannot see it ? Will you deny the Almighty because the eye cannot see Him that made it ? What else do we know of the most tangible substances, than that they exhibit certain phenomena ? Did not Berkeley reject the testimony of his *senses*, because he could not comprehend the *nature* of matter ? But, did not *consciousness* compel him to recognize the immaterial soul, when he denied the existence of the *body* which it inhabits ? Do you go to Revelation for your proof of an Almighty Being ? Then, by the same rule your faith must repose upon the declaration, that man was first created an inanimate structure, and that animation was superadded as a distinct Act of Creation. Take either ground, Revelation, or the phenomena of Nature, and you must be consistent. Here, as in most things, Revelation and Nature mutually illustrate and sustain each other. Their annunciations are equally direct upon the subject before us, and open to the understanding of all. Our conclusions, therefore, flow irresistibly from *whichever* premises you may select.

Although it be rather premature, I will carry on my illustration in respect to life, by supposing the existence of some principle analogous in its material nature to that of electricity, or light, though essentially different in its constitution. Grant this fact, and skepticism is at once dissipated. You *see* and *feel* the thing, and yield to your sight and touch where you would not to thousands of demonstrations which are less likely to deceive. You grant the principle of light as an imponderable substance, because it impresses the sight, and this is your only natural proof of its existence. But, when *this* solitary proof is withdrawn by the interposition of the moon between us and the sun, your belief in the existence of an universal elastic medium, capable of being again rendered luminous by solar impulse, is in no degree affected. You go on to believe, though you do not even *see*, and have nothing but a dead analogy to impress the conviction.

Supposing, then, that organized beings possessed a principle of life that could, like light, be *seen*—they would then be allowed to be governed by this agent, and we should be relieved of the encumbrance of the physical and chemical hypotheses. But, though no such principle address itself to the sight like electricity or light, its existence is far more variously and conclusively attested by other phenomena. These phenomena, results, or facts, determine also the nature of the laws which prevail throughout the animated kingdoms ; and, being wholly different from such as rule in the inorganic world, it is *prima facie* evident, that powers or properties of which they are predicated, carry on the processes of health and disease. But, it is not *analogy* alone which forces this conclusion. The facts of which it is affirmed are incomparably more numerous and specific than those which appertain to all other powers of Nature ; whilst the scrutiny of ages has never produced a fact in opposition.

Indeed, with so much light upon our subject, so much of fact to substantiate our conclusions, it would seem highly probable that all facts which may be raised in opposition have no relative bearing, and that they are brought forward in the spirit of hypothesis.

The more comprehensive a law may be, the more readily is it known and determined, and the less likely is it that apparently conflicting facts will arise. Whenever such are produced, it is owing to a want of proper investigation. The facts are examined superficially ; and the speculative or the credulous mind seizes upon some prominent characteristic, and pushes its opposition to nature under the spur of novelty, or the delight of discovery, or the goad of ambition. This, as we shall ultimately see, is emphatically true of the application of chemical forces to the processes of life, and of the more strictly physical to the interpretation of disease and therapeutics.

Let us now apply these remarks in the way of another brief illustration. When Crawford promulgated his doctrine of animal heat, which was founded upon chemistry, it *should have been* obvious that his *indispensable* facts were only assumptions ; since all analogy in relation to organized beings rendered it in the highest degree probable that chemical agencies have no lot in the function of respiration, or in the production of animal or vegetable heat. The properties of life are too universally concerned with the results of organic beings to admit the probability that Nature is so inconsistent with herself—or, rather, the Almighty with Himself, as to have instituted a great system of government for the special economy of the organized kingdoms, and at the same time have admitted the forces of inorganic matter to determine *some* fundamental result ; and that result, especially, having intimate alliances, and close affinities with all such as clearly depend upon the vital principle.

Crawford's doctrine, however, prevailed almost universally, till it was finally shown, by the chemist himself, to be defective in the necessary facts. Chemistry then started off in pursuit of other hypotheses of animal heat that should be conformable to its own habits and prejudices. It elaborated a now prevailing doctrine that heat is evolved by the conversion of the fluids into the solids, with some mysterious connection with atmospheric air. But, it overlooks the perfectly subversive fact, that adult warm-blooded animals have an uniform and exalted temperature, and that an exact equilibrium is preserved between the conversion of the fluids into solids and of the solids into fluids, whereby the temperature of all adult animals should be regulated by that of the surrounding atmosphere ; whilst in infancy, the temperature is lower than in adults, although nutrition overbalances secretion. These facts are irresistibly conclusive against the hypothesis, and are one of the numerous examples in which chemistry has introduced into organic philosophy doctrines which are in total opposition to its own well-established laws. Other hypotheses, of a similar nature, have sprung up upon the ruins of Crawford's—neglecting all Unity of Design, sifting the facts for such only as are plausible, regardless of all the opposing phenomena of life, and scouting the grand principle in philosophy which forbids an unnecessary multiplication of causes. Before this invasion of chemistry upon the vital doctrine of organic heat, the phenomenon was expounded upon purely mechanical principles, as digestion had been ; it being supposed to arise from the friction of blood upon the circulatory vessels. Here, however, was something which was merely contingent, and in no respect involving

a violation of principle ; and I would far sooner take this palpable error, than the absurdities of the laboratory.

It will be a part of my *agreeable* task to exhibit the fallacies of the physical hypotheses of life and disease, as well as to inculcate principles which exalt our science above the mere world of matter, render it consistent in all its details, and present it to your attention as a department of knowledge fundamentally distinct from all other pursuits. Then shall you feel the quickening influence of a philosophical knowledge which distinguishes you from the rest of your race—of a knowledge which led the great father of our art to affirm that “a philosophical physician is like a god”—when you shall have some ennobling glimpses at a system of principles and actions of which the profound in other sciences have no just conception, and which you *alone* are qualified to direct to a great and specific result.

And this carries me again back to the essential philosophy of disease. Assuming that morbid actions are carried on by the forces which govern the natural functions, we may rationally conclude that every pathological change consists in some new mode of action which has been induced in the vital powers by morbific causes, and that the object of therapeutics is to restore the natural condition of those powers. When, therefore, we hear that inflammation, fever, or venous congestion, are constituted by stagnation of blood, and that all their results are interpreted by physical agencies, we may be certain that such hypotheses have no foundation. But, allowing these remarkable exceptions to the ordinary course of nature, what would science be worth, what its advantages to mankind, when thus surrounded by exceptions which cover the whole fabric with doubt, and which divest the most important diseases of all ground for any intelligible treatment ?

There is no practical pursuit, in which consistent and philosophical theory is so important as in medicine. Every practitioner, as I have said, is irresistibly influenced by theoretical views of disease, and none more so than they who are most ignorant of its merits. How important, therefore, that our first theoretical conceptions should be *right*—since, being right or wrong, they will be either for good or for evil. Where medical doctrines are not laid upon the broad basis of Nature, or where mechanical or chemical philosophy is allowed to usurp the place of *vitalism*, you will commonly find that theoretical views, and the application of remedies, are at the mercy of every prominent symptom. As new symptoms are constantly rising as the disease acquires exasperation, the hypotheses and the treatment undergo the most contradictory changes—being often within a few hours in absolute opposition.

Thus, gentlemen, you perceive that neither the poorest nor the best of us can move without *theory* as well as experience for our guide ; and it behoves us, therefore, to lay well the foundation of medical doctrines. Whether true or false, they will surely operate ; and nothing is more difficult than to correct the errors which we imbibe in the course of a medical education. It is with a view to the importance of these objects, that I have addressed you in this general manner in my first lecture, as well, also, to give you some apprehension of the objects of my course, before we embark upon a consideration of the *Materia Medica*, which I

shall teach you in its special relations to medical philosophy. The field over which we shall travel, is of boundless extent, but is everywhere marked by prominent outlines. These outlines I shall be mainly employed in presenting to your attention, under the scrutiny of a vigorous analysis. They have all an intimate association—beginning in simplicity and ending in unfathomable complexity; yet always true to the simple elements, and always determined by immutable laws. Beginning with what is simple, we shall ascend, step by step, to what is complex—till at last, and along a chain of the closest analogies, we attain the most intricate of the whole, and which embraces every part of our plan—the consideration of remedial agents, and their just application to disease. I shall endeavor, therefore—feebly it is true—to teach you the Institutes of Medicine as they are founded in Nature, and with an undeviating view to the Materia Medica. And that this great ultimate object of all medical acquirements should have been taught in our schools apart from the Institutes of Medicine, has always appeared to me an artificial and unnatural separation. I know not, indeed, how the Materia Medica can be intelligibly taught without being associated with extended instruction in the principles of physiology and pathology, to which the investigation of every article should have an unceasing reference. Isolated from these, the Materia Medica can, at best, consist only of a dry detail of facts, without a spark of the animation of which it is susceptible, with no associations to illustrate its vast and endless relations to disease, or to connect them with memory—nothing to govern their therapeutical application, but the monotony of an empiricism as sickening as the drugs themselves.

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